Digital Storytelling as a Mediation Tool to Support In-depth Reflection?

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Abstract: Reflection is considered as important in education. In this contribution we examine to what extent digital storytelling supports in-depth reflection. Furthermore, we examine whether learner control leads to a higher degree of in-depth reflection when students reflect by writing a digital story. 88 reflection assignments of pre-service teachers (= bachelor preschool teachers and bachelor primary school teachers) were used in the analysis. Firstly, when students have more control over their reflection assignments, they score better on the degree of in-depth reflection than without control. Secondly, the results show that the digital stories did not contain a lot of elements of in-depth reflection.

Introduction

Since the eighties, reflection is considered as important in education (James, 2007; Korthagen, Koster, Melief & Tigchelaar, 2002). In addition, the learning outcomes of teacher training programs in Flanders indicate that graduates of preschool and primary school teacher training programs have to be able to reflect on their teaching practice ("Decree of the Flemish Government", 2007). In this contribution, the notion of critical reflection is used and we refer to a definition of Watts and Lawson (2009): students reflect critically "... to actively improve current practice through a process which involves systematically evaluating a range of complex factors resulting in a judgement or decision about a course of action or future response" (Watts & Lawson, 2009, p. 610).

To indicate when reflection can be considered as critical, we follow the theoretical work of Kelchtermans. Only when reflection includes elements of in-depth reflection and in-breadth reflection, it can be considered as critical reflection (Kelchtermans, 2001). According to Kelchtermans in-breadth reflection not only refers to a technical dimension of teaching by the pre-service teacher, it also includes moral, political and emotional dimensions. Because in-breadth reflection includes moral, political and emotional dimensions, it cannot be interpreted under the denominator 'technical reductionism' (Kelchtermans, 2001). Kelchtermans links in-depth reflection to a personal interpretive framework that contains two major subcategories: 'professional self' and 'subjective educational theory'. The subcategory professional self is further divided into self-image, self-esteem, job motivation, future perspective, task perception and job satisfaction.

By itself, however, reflection is not necessarily critical; reflection may become nothing more than a procedure; nothing more than 'an enumeration of concrete situations' (Kelchtermans, 2001). That students not necessarily reach a critical level, is confirmed by several studies. Research reveals that it does not seem that teacher or student teacher are led, through reflection on their own practice, to take a critical view of the structural or ideological context in which they are working (McIntyre, 1993). Furthermore, it appears that students not necessarily achieve a level where they come to a transformation of their own assumptions (King & Kitchener, 2004; Kreber, 2004).

That critical reflection is not evident, is also confirmed in a study that researches how (graduated!) teachers learn from experience at the workplace (van Eekelen, 2005). This study shows that most learning situations -reported by teachers- are not 'self-driven' and not part of a cyclical process. This study also reveals that the role of reflection on the learning of teachers is not clear; teachers look back on their experiences and formulate plans; but not in a structured, systematic manner.

How support critical reflection?

As mentioned, research reveals (see van Eekelen, 2005, King & Kitchener, 2004, Kreber, 2004, Mc Intyre, 1993) that it is not evident for students to reflect critically. Therefore, it seems appropriate to define what factors determine whether or not students succeed in making critical reflections. Based on a literature analysis, we distinguish: relevant challenges, interpretation of the concept reflection, characteristics of the learner,

autonomy, intentional feedback, interaction with others, approaches to reflect and training & reflective practica. In this study we focus on autonomy and approaches to reflect.

Autonomy

Procee (2006) makes a distinction between 'reflection' and 'reflectivity'. Reflectivity is characterized by a hegemonic, normalizing idea of education; and reflection is more an 'embodiment' of critical social theory. What means: when the point of view is a normalizing idea of education (confer reflectivity) the assignments to make reflections departs from clearly defined frameworks (determined by a lecturer); in contrast: from the perspective 'reflection' more control is given to the student. The concept 'reflection' may be linked to 'critical reflection'. Further, reflection may -according to Procee (2006)- be considered as an unique activity. The concept reflection expects that on the one hand students adopt an 'autonomous' attitude, and on the other that lecturers adopt a 'coaching' attitude. Vergeer (2001) defines 'autonomous acting' at school as the ability of a student – alone and with peers and teachers – to choose and realize his preferred way of learning, on the understanding that a school creates the opportunity to do so. We interpret autonomy in this contribution as 'learner control'. In addition, the expectation exists that more cognitive elaboration occurs in a more 'learner-controlled instructional treatment' (Williams, 1993); this because making decisions requires deeper processing and reflection on the learning process (Daniels, 1996). Critical reflection requires ample cognitive elaboration, which is an additional argument for the assumption that learner control is important in supporting students to reflect critically.

Lunts (2002) assumes that the effectiveness of learning control is particularly dependent on the profile of the learning population; Park (1991) assumes the importance of meta-cognitive abilities and appropriate cognitive strategies. Research reveals the importance of prior knowledge (Kopcha & Sullivan, 2008; Scheiter & Gerjets, 2007; Von Mizener & Williams, 2008), self-regulated skills (Scheiter et al., 2007), and epistemological beliefs (Scheiter et al., 2007). Research on learner control seems to focus on 'hypermedia learning'.

Scheiter et al. (2007) indicate that assigning control to the learner is not unidimensional, but depends on the nature of the decisions to be made. To define learner control in function of the characteristics of 'reflection' (which include theoretically more learner control), we refer to Procee (2006) who distuinghes three 'dimensions' to make 'reflection' more concrete: "The first dimension is purpose (what is the goal of reflection), the second is process (how is reflection exercised), and the third is focus (what is the central event or experience to reflect upon)" (Procee, 2006, p. 238).

Approaches to reflect

Stroobants, Chambers and Clarke (2007) and Kelchtermans (2001) distinguish between (a) approaches to reflect that put a greater emphasis on the meditative side of reflection and (b): approaches to reflect that emphasize change through action at the workplace.

Stroobants et al. (2007) and Kelchtermans (2001) link approaches that focus on a meditative side of reflection with a "narrative" point of view, and they assume that this kind of reflection approach focuses on in-depth reflection. Furthermore, approaches that emphasize change through action at the workplace are assumed to support in-depth and in-breadth reflection (Kelchtermans, 2001).

In this study we use a meditative approach to reflect, and select digital storytelling as concrete methodology. Banaszewski (2005) defines digital storytelling as: "The practice of combining personal narrative with multimedia (images, audio and text) to produce a short autobiographical movie" (p.1). In his book: Digital Storytelling Cookbook, Lambert (2003) mentions several aspects to support students to write a digital story. Table one summarizes the seven elements brought forward by Lambert (2003).

Seven elements to write a digital story	
During writing	*During Construction*
1. A point of view	4. Pacing
2. Dramatic question	5. Gift of your voice
3. Emotional content	6. Soundtrack
	7. Economy

Table 1: Seven elements to write a digital story, adapted from 'Digital Storytelling Cookbook' (Lambert, 2003).

Research questions

The main research question of this study is twofold: 'To what extent does digital storytelling in line with the guidelines of Lambert support in-depth reflection ?' and 'Does learner control affect the degree of in-depth reflection when students reflect by writing a digital story?'

Design of the study

This research focuses on in-depth reflection. More specifically, we examine whether learner control increases the extent of in-depth reflection when students reflect by writing a digital story. 96 students participated; students who follow a preschool teacher training program (= BAKO, bachelor preschool teacher; n= 55) and students who follow a primary school teacher training program (= BALO, bachelor primary school teacher; n= 41). These third year pre-service teachers were asked to reflect on the progress they make during their `bachelor degree test`. The bachelor degree test is a graduation test in which the integration of different disciplines - linked to a practical problem – takes a central place. More concrete, they were asked to make several reflection assignments by writing a digital story, of which one with learner control and one without learner control. Digital storytelling was for them a new methodology to reflect. Given drop-out, we have only selected the reflection assignments of 44 students (BAKO, n=27; BALO, n=17). The drop-out had to do with the following factors: no report was included with the digital story, not all digital stories were technically okay, the reflections were not complete (for instance: competences were not mentioned). There were two conditions (control and no control) what means that 88 reflection assignments were used in the analysis. In contrast to the control condition, students in the no control condition were asked to strictly apply a template (they had to prepare a PowerPoint presentation –no other software!-of maximum 15 slides, with the following guidelines: limited animation, short texts, embedding images, but no sound recordings, music or moving images) and to reflect on specific competences, i.e. 'the teacher as educator' or 'teacher as an innovator and as a researcher`.

The analyses focuses on the number of elements that refers to in-depth reflection. To make the theoretical concept in-depth reflection measurable, different indicators were used. Thereby the following steps were undertaken. Firstly, in line with Kelchtermans (2001) the descriptions of the subcategories of in-depth reflection: subjective educational theory and professional self (further divided into self-image, self-esteem, job motivation, future perspective and task perception) were used. Secondly, a discussion between two assessors about the interpretation of these descriptions, leads to more concrete guidelines. The descriptions of the subcategories and the guidelines were used to determine whether an element in a reflection assignment belongs to one of the subcategories of in-depth reflection. A high number of elements in a reflection assignment that refers to one (or more) of these subcategories, means in this design a high degree of in-depth reflection. To analyze the reflections, students were asked to write a short additional report to clarify the point of view, the dramatic question and the emotional content of the digital story. Because images are rather difficult to interpret without explanation of the student, this report was used to analyze the digital stories. By granting a score, we rely on the conclusions of the discussions between the assessors. In summary, this means that the assessors motivated each score; and that based on this argumentation -and not, for example by taking the mean of the scores - both assessors together decided if an item scores or not (Van Beirendonck, 1998). To avoid interference, the granting of a score happened blind. After analyzing, the documents were linked to the original conditions and inserted into an SPSS file.

During a plenary briefing, the different reflection assignments and the methodology digital storytelling were explained and illustrated. To explain the methodology digital storytelling, we used the guidelines of Lambert to write a digital story. Lecturers were informed about the study, but they did not know which indicators were used in the analysis. Students were not told that their reflection assignments would be used for research.

For the analysis we used the number of elements that refers to in-depth reflection in the selected 88 reflection assignments. A one-way ANOVA (with exceedance probability of 0.05) is used; with learner control as independent variable and in-depth reflection as dependent variable. We used a partial eta-squared to measure the effect size; for an interpretation of the results of the partial eta-squared we used the guidelines of Nijdam (2003): $eta^2 < 0.05$ is a weak to moderate effect; $0.05 <= eta^2 < 0.15$ is a medium strong effect; $eta^2 >= 0.15$ is a strong effect; $eta^2 >= 0.30$ a very strong effect.

Findings

The analysis reveals that 86.4 % of the 88 reflection assignments did not score on in-depth reflection; the mean score of the reflection assignments is 0.14 (SD=0.345).

Score	Frequency	Percent
0	76	86,4
1	12	13,6
Total	88	100,0

Table 2: Sum in-depth reflection

A one-way ANOVA shows a significant, medium strong main effect of learner control on the degree of in-depth refection ($F(1, 87)=6.491$; $p=0.013$; $eta^2=0.070$). When students have learner control, they score better on the degree of in–depth reflection (Mean = 0.23, SD = 0.424), than when they have no learner control (Mean = 0.05, SD = 0.211).

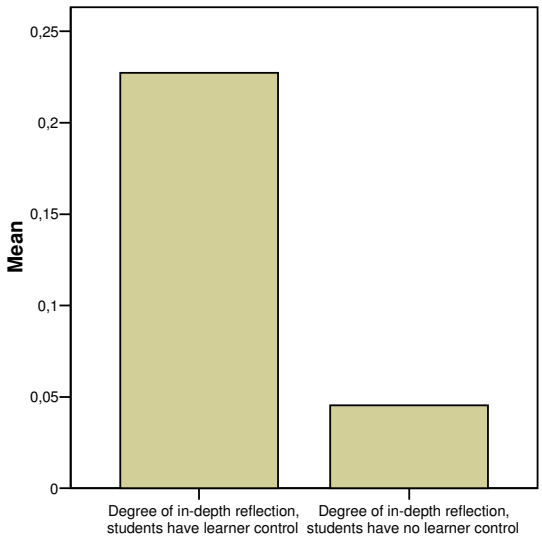

Figure 1: Degree of in-depth reflection*learner control/no learner control

Furthermore, the analysis reveals that the reflections from only 12 students (27.3 %) score on in-depth reflection.

Score	Frequency	Percent
0	32	72,7
1	12	27,3
Total	44	100,0

Table 3: Degree of students that score on in-depth reflection

When no learner control is provided, only two students (4.54 %) score on in-depth reflection; with learner control, 10 (other!) students (22.72 %) score on in-depth reflection.

Discussion and conclusion

The main research questions in this contribution is twofold: 'To what extent does digital storytelling with the guidelines of Lambert support in-depth reflection ?' and 'Does learner control affect the degree of in-depth reflection when students reflect by writing a digital story?

As mentioned in the introduction, reflection is considered to be important in education. It is striking that students in this study -when they reflect by writing a digital story- have a very low score on in-depth reflection,. Furthermore, the best score is obtained when students have more learner control over their digital stories.

In conclusion, we first make some methodological remarks and next discuss the results. A major problem for field experiments is that there is no way to control all the possible independent variables (Swanborn, 1987). Moreover, a teaching context is a complex setting in which many events may be occurring simultaneously. An literature analysis (see earlier) reveals that –beside autonomy and approach to reflect- the following factors may have impact on the degree of critical reflection and thus on in-depth reflection: relevant challenges, interpretation of the concept reflection, characteristics of the learner, intentional feedback, interaction with others, and training & reflective practica. Therefore it seems necessary to conduct an experiment (in which the mentioned factors are controlled) to check whether the results of this field-experiment are confirmed. Due to the fact that the results show a relative high standard deviation, it seems that the assumption that learner characteristics may have an impact on the degree of in-depth reflection when students reflect by writing a digital story, is –at least partly- confirmed in this study. We also want to discuss the analysis of the digital stories. Students were asked to write a short report, in which they clarify the point of view, the dramatic question and the emotional content of the digital story. This was done because images are rather difficult to interpret without

explanation of the student. However, this approach to analyze the digital stories does raise the question whether this short rapport captured the real intention of students to write the digital story; it also does raise the question if students were motivated enough to write an additional report.

We consider digital storytelling as an approach that puts more emphasis on the meditative side of reflection. The conclusion that students in this study score low on the degree of in-depth reflection when they reflect by writing a digital story, does raise the question if approaches that emphasize 'change through action at the workplace' will support more in-depth reflection than a meditative approach. Finally: if digital storytelling is used to support in-depth reflection we recommend –based on the results of this study- to give learner control over the reflection assignments.

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